

Appl. No. 10/749,045
Amtd. Dated October 8, 2007
Reply to Office Action of July 9, 2007

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Amendments to the Claims

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This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for producing a light guide plate, comprising the steps of:

providing a molding machine comprising an injection machine and a mold, the mold comprising a single first plate having a side wall and a single second plate having a side wall opposite to the first plate, the second plate defining a sprue therein, wherein the side wall of the first plate faces the side wall of the second plate in a non-parallel manner, and a cavity is formed between the first plate and the second plate, the cavity having one of a wedge shape and a papilionaceous double-wedge shape in cross-section, the cavity communicating with and a cylinder of the injection machine via the sprue;

feeding a transparent resin into the cylinder;
melting the resin in the cylinder; and
rejecting-injecting the molten resin from the cylinder into the cavity of the mold via the sprue in the second plate; and

cooling the molten resin so that it solidifies by means of a refrigerant filled in a fluid passageway, wherein the fluid passageway is provided in the first plate and is arranged in a plane non-parallel with the side wall of the first plate and parallel with the side wall of the second plate;

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wherein a viscosity of the molten resin at an inlet of the mold is in the range from about 200 to about 1,000 Pa.sec, and an injection rate of the molten resin is in the range from about 1,000 to about 2,500 cm³/sec.

Claim 2 (original): The method for producing a light guide plate as claimed in claim 1, wherein the resin is methyl methacrylate resin.

Claim 3 (original): The method for producing a light guide plate as claimed in claim 1, wherein the temperature of the resin in the cylinder is set in the range from about 170 to about 300 °C.

Claim 4 (original) The method for producing a light guide plate as claimed in claim 1, wherein the temperature of the resin in the cylinder is set in the range from about 190 to 270 °C.

Claim 5 (canceled)

Claim 6 (original): The method for producing a light guide plate as claimed in claim 1, wherein a viscosity of the molten resin at the inlet of the mold is in the range from about 50 to about 5,000 Pa.sec.

Claim 7 (original): The method for producing a light guide plate as claimed in claim 1, wherein the molten resin is continuously injected into the cavity with rotation of a screw in the cylinder.

Claim 8 (previously presented): The method for producing a light guide plate as claimed in claim 1, wherein an engraved pattern is provided on the side wall of the first plate or the side wall of the second plate, in order to provide the obtained light guide plate with a corresponding pattern of dots.

Claim 9 (previously presented) The method for producing a light guide plate as claimed in claim 1, wherein an engraved pattern is provided on a cavity plate that is attached on the side wall of the first plate or the side wall of the second plate, in order to provide the obtained light guide plate with a corresponding pattern of dots.

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Claim 10 (currently amended): A mold for producing a light guide plate, comprising:

a single first plate having a side wall;

a single second plate having a side wall opposite to the side wall of the first plate, the side wall of the second plate being non-parallel to the side wall of the first plate, the second plate defining a sprue therein;

a cavity for molding a light guide plate defined between the first plate and the second plate, the cavity having one of a wedge shape and a papilionaceous double-wedge shape in cross-section, the cavity being in communication with the sprue; and

a fluid passageway provided in the first plate for cooling and solidifying molten resin injected into the cavity;

wherein the fluid passageway is arranged in a plane non-parallel with the side wall of the first plate and parallel with the side wall of the second plate.

Claim 11 (original): The mold for producing a light guide plate as claimed in claim 10, wherein a fluid passageway is provided in the second plate, parallel to passageway of the first plate.

Claim 12 (canceled)

Claim 13 (canceled)

Claim 14 (original) The mold for producing a light guide plate as claimed in claim 10, wherein the mold is made of copper or a copper alloy.

Claim 15 (original): The mold for producing a light guide plate as claimed in claim 14, wherein a material of the mold is mixed with any one of Ni, NiCo, NiP, SiC, Cr and TiC.

Claim 16 (previously presented): The mold for producing a light guide plate as claimed in claim 10, wherein an engraved pattern is provided on

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the side wall of the first plate or the side wall of the second plate.

Claim 17 (original): The mold for producing a light guide plate as claimed in claim 10, further comprising a cavity plate attached on the side wall of the first plate or the second plate, the cavity plate having an engraved pattern provided thereon.

Claim 18 (original): The mold for producing a light guide plate as claimed in claim 16, wherein the pattern comprises a plurality of concavities.

Claim 19 (original) The mold for producing a light guide plate as claimed in claim 17, wherein the pattern comprises a plurality of concavities.

Claim 20 (currently amended): A method for making a light guide plate comprising:

providing a mold including opposite first and second plates wherein the first plate defines a non-oblique side wall, and said second plate defines an oblique side wall spatially facing to each other the non-oblique side wall, and the first plate and the second plate commonly define a cavity thererbetween for forming said light guide plate, the first plate has a sprue defined therein, and the sprue communicates with the cavity; and

providing said second plate with a plurality of cooling fluid passageways adjacent to said oblique side wall under a condition that said plurality of passageways are arranged in a plane with regard to the oblique side wall in a non-parallel manner.

Claim 21 (new): The method for producing a light guide plate as claimed in claim 20, wherein the first plate is a single plate.